

Burkholderia Cepacia Endophthalmitis: An Unusual Presentation

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Abstract

Purpose: To report three cases of *Burkholderia cepacia* endophthalmitis following uneventful phacoemulsification surgery.

Case Report: Three cases presented with blurriness of vision 2 to 3 weeks following phacoemulsification. Vitreous culture confirmed the diagnosis. Pars plana vitrectomy with intravitreal injection of vancomycin (1 mg/0.1 ml) and ceftazidime (2.25 mg/0.1 ml) was performed. Despite several modalities of treatment, 2 cases did not respond to intravitreal antibiotics and vitrectomy. The first case ended up with phthisis bulbi and the second case underwent evisceration. One case improved after intravitreal injection of the first dose of antibiotic.

Conclusion: *B. cepacia* endophthalmitis is rare and difficult to treat. More studies are necessary to understand the course and outcome of the infection.

Keywords: Burkholderia Cepacia; Endophthalmitis; Vitreous Culture

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INTRODUCTION

Postoperative endophthalmitis is a rare but devastating complication (<0.1%) of cataract surgery.^[1,2] The incidence is increasing despite improving surgical safety.^[3]

Although gram-positive organisms are responsible for 90% of cases after cataract surgery,^[4] any bacteria can cause postoperative endophthalmitis.

Burkholderia cepacia (*B. cepacia*) is a gram-negative, oxidase-positive, non-fermenting bacillus. This organism can cause significant infection in

both immunocompromised patients and healthy individuals.^[5] We describe 3 cases of endophthalmitis caused by *B. cepacia*.

CASE REPORTS

Case 1

A 68-year-old healthy male patient underwent phacoemulsification and foldable intraocular lens implantation. Uncorrected visual acuity on the first postoperative day was 20/40. He returned to the outpatient department after 14 days with mild pain and blurriness of vision. Slit lamp examination showed a mild anterior chamber reaction with 1+ cells and flare, no redness of the eye or corneal haze

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and fundus was visible. He was diagnosed with low-grade endophthalmitis and was advised to take oral dexamethasone 40 mg along with topical moxifloxacin 0.5%, prednisolone acetate 1%, and atropine sulfate 1% eye drops. However, the anterior chamber reaction increased by the next visit after 3 days despite treatment [Figure 1]. B-scan ultrasonography [Figure 2] showed dot-shaped hyperechogenicities in the anterior vitreous. An aqueous and vitreous tap was performed and intravitreal vancomycin (1 mg/0.1 ml) and ceftazidime (2.25 mg/0.1 ml) were administered.

Gram staining and culture sensitivity confirmed the causative organism to be *B. cepacia*, which was resistant to most antibiotics including cefixime and moxifloxacin and was moderately sensitive to ceftazidime. Intravitreal injection was repeated after 7 days. There was no improvement in visual acuity after the injections, so pars plana vitrectomy (PPV) and injection of ceftazidime (2.25 mg/0.1 ml) were performed. However, the eye did not respond to treatment and progressed to pan-endophthalmitis and eventually phthisis bulbi within a period of 1 month.

Case 2

A 59-year-old female presented with decreased vision and mild pain in the left eye 21 days after uneventful phacoemulsification. Uncorrected visual acuity on the first postoperative day was 20/30. Slit lamp examination showed a mild anterior chamber reaction with 1+ cells and flare without redness of the eye or corneal haze, and the fundus was visible.

She responded well to conservative treatment and vision improved to 20/20 with no anterior chamber reaction 1 week after start of treatment; however, after 34 days, she returned with blurriness of vision and pain. Her vision was 20/200 with a severe anterior chamber reaction and 1 mm hypopyon [Figure 3]. Vitreous tap and injection of the same doses of intravitreal vancomycin and ceftazidime were repeated. Vitreous culture confirmed *B. cepacia*, which was resistant to most antibiotics including cefixime and moxifloxacin, but was moderately sensitive to ceftazidime. PPV and intravitreal reinjection of vancomycin and ceftazidime were performed. Postoperative visual acuity improved to 20/40 and the condition of the eye was stable for about 38 days. She reported severe pain and poor vision again and vision decreased to light perception. Eventually, evisceration was performed elsewhere.

Case 3

A 69-year-old one-eyed male presented with decreased vision and mild pain in the only eye 18 days after uneventful phacoemulsification with foldable intraocular lens implantation. He had lost his right eye following

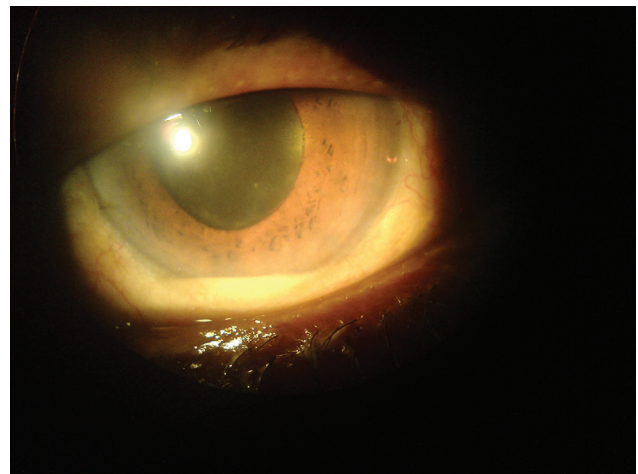


Figure 1. Anterior chamber reaction with hypopyon (case 1).

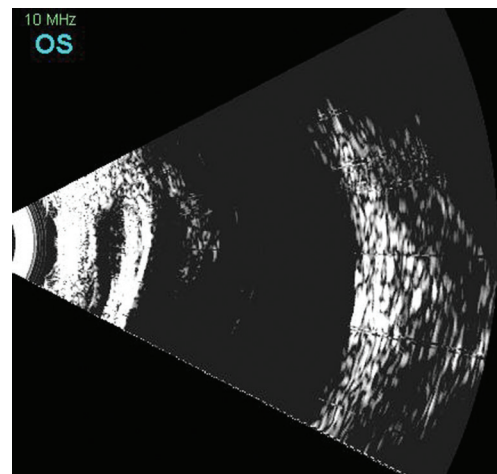


Figure 2. B-scan ultrasound showed vitreous infiltration (case 1).



Figure 3. Anterior chamber reaction and exudates behind the intraocular lens (case 2).

complicated cataract surgery.

Uncorrected visual acuity on the first postoperative day was 20/30, but decreased to counting fingers at 1 foot on the 18th postoperative day. Slit lamp examination

showed an anterior chamber reaction with 2+ cells and flare. Vitreous tap and intravitreal antibiotic injection were performed. Vitreous culture confirmed *B. cepacia* as the causative organism.

His eye responded very well to treatment and vision improved to 20/30 with no anterior chamber reaction after 1 week; the patient maintained good vision during a follow-up period of 1 year.

There were no systemic diseases in any of the cases presented. The source of infection could not be traced in any of the cases. In case 1, intracameral antibiotic was not used at the end of cataract surgery. However, in cases 2 and 3, 0.1 ml of 0.5% ophthalmic moxifloxacin solution had been injected intra-camerally at the end of surgery.

DISCUSSION

B. cepacia is an unusual non-fermenting, gram-negative rod that rarely causes infection in a healthy individual. It has been shown to be resistant to some antiseptics such as benzalkonium chloride and chlorhexidine at standard or high concentrations.^[6] Clinical presentation of this infection is not well understood. Cases reported in literature presented with purulent discharge, severe circumcorneal congestion, chemosis, and almost total corneal abscess.^[5,7]

B. cepacia can rarely present as posttraumatic, or acute-and delayed-onset postoperative endophthalmitis.^[8] Recurrent and persistent inflammation is also common. In this series, cases presented 2-3 weeks following surgery.

A variety of perioperative and intraoperative sterile products have been linked to outbreaks of endophthalmitis.^[9] Contaminated ophthalmic solutions, such as balanced salt solution, as well as hyaluronic acid, trypan blue, internal fluid pathways of a phacoemulsification unit, and a contaminated phacoemulsification handpiece, have all been implicated.^[9] Lalitha et al^[9] reported cluster *B. cepacia* endophthalmitis due to infected topical anesthetic eye drops. However, we could not identify the source of infection in our cases.

Treatment of *B. cepacia* infection is challenging due to antibiotic resistance, either intrinsic or acquired to multiple drugs.^[7] Previous studies reported this organism to be sensitive to ciprofloxacin and ceftazidime.^[8] However, in the current cases, the organism was resistant to most antibiotics, including ciprofloxacin, moxifloxacin, and vancomycin, with moderate sensitivity to ceftazidime.

Preference of intracameral antibiotic injection at the end of cataract surgery depends on surgeon's preference. Despite use of intracameral antibiotic at the end of cataract surgery in cases 2 and 3, both developed endophthalmitis. Culture results showed that the organism was resistant to the commonly used intracameral antibiotics, including vancomycin and moxifloxacin.

The outcome varies from case to case. Irvine et al^[10] reported a single case of *B. cepacia* after scleral laceration repair, but the patient regained 20/20 vision despite recurrent inflammation. In another series of 2 patients by Eser et al,^[11] favorable outcomes were achieved in both patients with vitrectomy and intravitreal ceftazidime. Lalitha et al^[9] reported that nearly 70% of patients attained good vision. Sachdeva et al^[8] achieved favorable outcomes of final best-corrected visual acuity 20/200 or better in 6 of 14 eyes (42.85%). In this study, only 1 patient had a favorable outcome and 1 developed phthisis bulbi.

Better understanding of surgical techniques and sterilization and proper use of prophylactic antibiotics and asepsis will probably reduce the incidence of postoperative endophthalmitis. Like other gram-negative organisms causing endophthalmitis, *B. cepacia* is also associated with poor visual outcomes, as reported in a previous study.^[8]

In conclusion, *B. cepacia* endophthalmitis is rare and difficult to treat. Multiple drug resistance is alarming. More research is necessary to understand the course and outcome of the infection.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of Interest

There are no conflicts of interest.

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